

# Appendix A

## Actions on Previous MDPH Recommendations

The following is a status report of actions taken on MDPH recommendations (**in bold**). The summary is based on reports from Hull School Department Officials, Jacobs Elementary School (JES) staff, reports from private consultants, as well as photographs and observations made by MDPH staff.

### *Renovations*

- **Consider appointing a construction liaison to coordinate efforts, facilitate communication and relay construction-related concerns between occupants, administration and construction personnel.**

**Action Taken:** A JES para-professional, Jodi Trubia was hired as a building liaison. The building liaison reportedly conducts daily walkthroughs to observe and document conditions in the building.

- **Inspect classrooms for cleanliness and construction barriers for integrity *daily* prior to the opening of school. Consideration should also be given to inspect construction barriers at the end of the school day prior to construction work. In addition, encourage school staff to report any breaches in construction barriers immediately to the main office during the school day.**

**Action Taken:** See above Action.

- **Develop a notification system for building occupants immediately adjacent to construction activities to report construction/renovation related odors and/or dusts problems to the**

**building administrator. Have these concerns relayed to the contractor in a manner to allow for a timely remediation of the problem.**

**Action Taken:** A log has been created for staff to document health and safety concerns/complaints and is accessible to school staff in the main office.

- **If construction barriers are used in subsequent phases of the project, seal on all sides with polyethylene plastic and duct tape. Seal these barriers on the construction as well as the occupied side to provide a dual barrier. Ensure integrity of barriers by monitoring for light penetration and drafts around seams.**

**Action Taken:** Floor-to-ceiling construction barriers were erected due to the removal of asbestos floor tiles in rooms being phased for renovation, which requires strict adherence to state and federal regulations involving containment and isolation methods. The solid barriers consisted of wood frames and gypsum wallboard that were sealed at the edges with duct tape and/or caulking (Pictures A-1 through A-5). The interior of the solid barriers (i.e., the construction side) were sealed floor to ceiling with polyethylene plastic. In addition, CEH staff recommended sealing doors that traverse a common wall with construction areas be sealed with polyethylene plastic and duct tape on the occupied side as a secondary barrier (Pictures A-1 and A-5).

- **Use local exhaust ventilation and isolation techniques to control for renovation pollutants. Precautions should be taken to avoid the *re-entrainment* of these materials into the building's HVAC system. The design of each system must be assessed to determine how it may be impacted by renovation activities. Specific HVAC protection requirements pertain to the return, central filtration and supply components of the ventilation system. This may entail shutting down systems (when possible) during**

**periods of heavy construction and demolition, ensuring systems are isolated from contaminated environments, sealing ventilation openings with plastic and utilizing filters with a higher dust spot efficiency where needed (SMACNA, 1995).**

**Action Taken:** In addition to construction barriers, numerous air filtration units equipped with high efficiency particulate arrestance (HEPA) filters were stationed in the construction area. These units are designed to *depressurize* the construction area to draw airborne pollutants generated by adjacent construction *away* from the occupied area.

- **Implement prudent housekeeping and work site practices to minimize exposure to renovation pollutants. Consider increasing the number of full-time equivalents or work hours for existing staff (e.g., before school) to accommodate increase in dirt, dust accumulation due to construction/renovation activities. To control for dusts, a high efficiency particulate air (HEPA) filter equipped vacuum cleaner in conjunction with wet wiping/mopping of all surfaces is recommended.**

**Action Taken:** School officials reported that due to the closing of the modular wing efforts from existing maintenance staff could be re-directed to improve cleaning in the main building. Thorough cleaning however is challenging, as described in the previous MDPH assessment (MDPH, 2006) due to the accumulation of materials, which make it difficult for custodial staff to clean. Overall clutter should be reduced. Dust control and general cleaning needs to be improved, especially on flat surfaces, near windows and in and around unit ventilators.

- **Consider installing filter media to the outside of air intakes to decrease the entrainment of airborne particulates.**

**Action Taken:** Filter paper was installed on the exterior of univent air intakes to help reduce the infiltration of airborne dust and particulates generated from the outside the building (Picture A-6).

### *General Air Quality Recommendations*

- **Operate *all* ventilation systems throughout the building (e.g., gym, cafeteria, classrooms) continuously during periods of school occupancy independent of thermostat control to maximize air exchange.**

**Action Taken:** All univents in classrooms surveyed were operational during the assessment.

Two of the units had been deactivated by occupants due to heat complaints (Table 1), therefore no means of mechanical ventilation were being provided during the assessment. Attempts were reportedly made to reactivate exhaust ventilation, several of them were not operating at the time of the assessment and said to be on a repair list. The status of items on this list should be shared with the building liaison who, in-turn should keep maintenance staff informed of any additional items in need of repair identified during daily walkthroughs and input from JES staff

- **Contact an HVAC engineering firm to examine modular AHUs and univents to improve air exchange in classrooms and the MCO.**

**Action Taken:** The modular classroom wing was closed during the reassessment. No plans were reported for reoccupancy.

- **Open windows to supplement the introduction of outside air and improve air exchange/comfort in classrooms.**

**Action Taken:** Windows were open in several areas during the reassessment. As stated in the previous MDPH report, building occupants should be aware of construction activities that may be

conducted in close proximity to their classrooms. In certain cases, HVAC equipment and windows to classrooms adjacent to construction activities may need to be deactivated/closed periodically to prevent unfiltered air and vehicle exhaust from entering the building.

- **Utilize ceiling fans in cafeteria or station stand-up fans to circulate air from the mechanical ventilation system and openable windows.**

**Action Taken:** Windows were open and ceiling fans were in use in the cafeteria during the reassessment.

- **Ensure leaks are repaired and replace water-damaged ceiling tiles. Examine the area above and around these areas for mold growth. Disinfect areas of water leaks with an appropriate antimicrobial.**

**Action Taken:** Water stained ceiling tiles from historic leaks were seen in several areas.

Occupants should be encouraged to inventory classrooms and list damaged/missing ceiling tiles in the maintenance request log located in the main office.

- **Store cleaning products and chemicals properly and keep out of reach of students.**

**Action Taken:** Cleaning products continued to be stored in unlocked cabinets and on countertops in reach of children (Picture A-7). Many of these products appeared to be brought from home without the knowledge of school personnel who maintain material data safety sheets (MSDS) for chemicals used in the school. Therefore it is unlikely that MSDSs for these materials are available on site.

- **Clean air diffusers, exhaust/return vents and personal fan blades periodically of accumulated dust.**

**Action Taken:** More work is needed in this area (Pictures A-8 through A-10).

- **Consider discontinuing the use of tennis balls on furniture and replacing tennis balls with alternative “glides”.**

**Action Taken:** Tennis balls were still observed in a number of areas (Table 1).

- **Develop a clear line of communication between the central maintenance department and school personnel for prompt remediation of temperature and/or ventilation concerns/complaints. This can be done by establishing a written request system (e.g., work order form) administered by a single responsible person**

**Action Taken:** As previously discussed, a log has been created and is accessible to school staff in the main office. The log should be utilized for staff to document health and safety concerns as well as routine maintenance requests (changing ceiling tiles, sink leaks, HVAC repairs, etc.).

**Picture A-1**



**Floor to Ceiling Containment Wall Separating Construction from Occupied Areas,  
Note Door in Foreground**

**Picture A-2**



**Floor to Ceiling Containment Wall Separating Construction from Occupied Areas**

**Picture A-3**



**Door to Construction Area Sealed with Caulking**

**Picture A-4**



**Door to Construction Area Sealed with Duct Tape**

**Picture A-5**



**Door Separating Construction from Occupied Area**

**Picture A-6**



**Filter Paper Installed over Univent Air Intakes**

**Picture A-7**



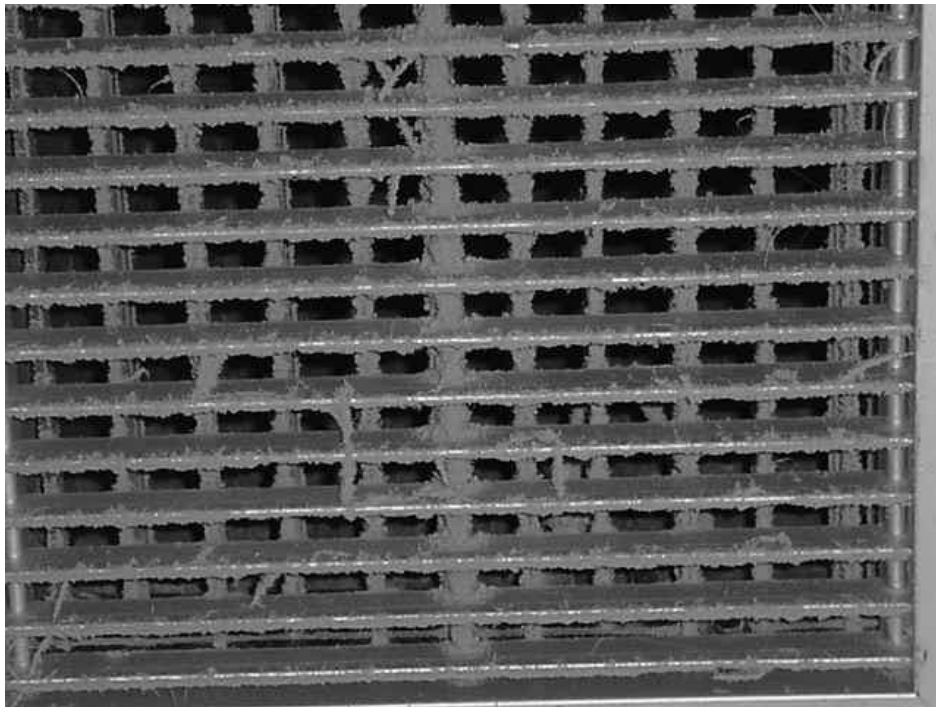
**Spray Cleaning Products in Classroom**

**Picture A-8**



**Dust/Debris Accumulation on Surface of Supply Diffuser**

**Picture A-9**



**Dust/Debris Accumulation on Surface of Exhaust Vent**

**Picture A-10**



**Dust/Debris Accumulation on Personal Fan in Classroom**